

U.S. Application No. 10/645,587

AMENDMENT

REMARKS

Applicant thanks the Examiner for careful consideration of the application.

The specification has been corrected as suggested by the Office Action

Applicant respectfully traverses the objections and rejections, and makes the present amendments only to facilitate prosecution of the application.

Claim 4 is rejected as allegedly failing to comply with the enablement requirement of the first paragraph of 35 U.S.C. §112, as stated in paragraph 5 on page 3 of the Office Action. Applicant respectfully requests reconsideration and withdrawal of this objection, in view of the discussion below with respect to Claim 4. It is respectfully submitted that any terms not expressly included in the specification, are inherently disclosed by the specification. For example, the fact that the electrodes may react is disclosed by the discussion of cleaning electrodes in the second paragraph on page 42 of the specification.

Claims 1, 3 and 4 are rejected as allegedly indefinite under the second paragraph of 35 U.S.C. §112, in paragraph 7 on page 4 of the Office Action. Claims 1 and 3 have been amended to change “the” to “a” which is understood to overcome this objection as to format. Claim 4 has been similarly amended to change instances of “said” and “the” to “a” and “an” as appropriate, and to separate the claim into sub-paragraphs without the use of “whereupon” and “whereby” so as to clarify the steps, which are understood to be objections as to format.

Claims 1-3 are rejected as allegedly anticipated by Dibelius et al., U.S. Patent No. 3,342,721, (referred to below as “Dibelius”) under 35 U.S.C. §102(b), in paragraph 10 on page 5 of the Office Action. Applicant respectfully traverses this reaction because the limitation

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“flowing” in independent Claim 1 of the present application, and thereby incorporated into dependent Claims 2-6 of the present application, is not anticipated, suggested or rendered obvious by Dibelius.

Claim 1 of the present application is a method comprising “the step of flowing a liquid dielectric over a surface of a first electrode.” In paragraph 0016 of the present application, which is the first paragraph on page 7 of the application, Applicant discloses that “arcing between the electrodes is prevented by passing a dielectric liquid over the electrodes, or a fixed dielectric barrier over which a conductive or dielectric liquid is caused to flow.” In the same paragraph, it is stated that “subsequent reaction of these chemical species creates new chemical constituents, including gas and particulate matter which contacts liquid flowing over the electrodes and is absorbed, or reacted, with the liquid and its constituents.”

In paragraph 0077 of the present application, which is the last paragraph on page 18 of the application, Figure 4 is described as disclosing that the “breakdown of the dielectric covering the electrode, and the associated arcing, is preferably prevented within the present invention by utilizing a liquid dielectric 136 flowing over the electrodes to prevent dielectric breakdown.” Application at pages 18-19.

With reference to Figure 25, the liquid dielectric 424 is distributed over the inner and outer dielectric barriers using weirs 432. See the application at page 38, lines 13 and 20-21.

Dibelius discloses spraying not flowing. Figure 1 of Dibelius shows a “nozzle receiving side arm 18” as stated at column 3, line 6. Figure 2 discloses “nozzle 36 [which] may removed from the side arm and replaced with a nozzle of differing size or angle of impingement whenever a liquid of differing properties is to be used in the reactor.” See column 3, lines 51-55. Figure 3 disclosures a “plurality of guides in the form of nozzles 41” as stated at column 3, lines 67-68.

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Figures 4 and 5 disclose a “modified liquid guide in the form of nozzle 49 combining the function of a nozzle and sidearm” as stated in column 4, lines 11-13. Figures 6 and 7 disclose a “nozzle 53 having orifices 54 and 55 directed toward the outer and inner guides respectively.” See column 4, lines 42-44. Figures 8 and 9 disclose “annular nozzle 57 having an annular orifice 58 directed axially of the annulus between the electrode assemblies.” See column 4 at lines 58-60.

The nozzles of Dibelius do not anticipate, suggest or render obvious the flowing of the presently claimed method, which is achieved using the weirs of the present invention.

Claim 4 is rejected in the alternative as either anticipated under 35 U.S.C. §102(b), or obvious under 35 U.S.C. §103(a), from Dibelius in paragraph 11 on pages 5-6 of the Office Action. The nozzles of Dibelius do not anticipate, suggest or render obvious the flowing of the dielectric liquid as recited in the present claims, which is achieved using weirs as more fully discussed above.

With respect to Claim 4, Applicant explains that gas enters the plasma region of the Falling Film Plasma (FFP) reactor resulting in reaction and formation of primary products comprised of gases, liquids and solids. The primary products are dissolved and suspended in the falling film liquid which contacts the solid surfaces comprising the reactor electrodes or dielectric layer. The reaction products are brought in contact with the solid surfaces as a result of diffusion through the liquid, and as a result of electrophoresis caused by the strong electric field within the plasma reactor. During the process of electrophoresis, the reaction products are concentrated near the inner or outer electrodes. The liquid flowing closest to the electrodes provides a liquid fraction more concentrated with the primary products. Further, activation of the electrode surface by the electric field causes primary products to combine or undergo additional reactions at the solid surfaces to form secondary products.

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The Office Action does not object or reject Claims 5 and 6, but the cover page of the Office Action erroneously lists Claims 5 and 6 as withdrawn in view of the restriction requirement in the previous Office Action dated January 10, 2007. The present Office Action dated March 15, 2007, correctly lists Claims 7 and 8 as withdrawn, and these are hereby canceled without prejudice or disclaimer.

Applicant asks that all claims now be allowed.

Respectfully submitted,

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